UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

April 11, 1995

Mr. Dennis aRusso
Rhode Island Solid Waste Management Corporation
Central Landfill
65 Shun Pike
Johnston, Rhode Island 02919

RE: EPA comments to the *Upper Simmons Reservoir, Phase II Report, Operable Unit 2 Remedial Investigation - Task 1, Central Landfill, Johnston RI, July 1993.*

Dear Mr. aRusso:

EPA has completed its review of the subject Phase II Report. Generally, the work conducted appears to have been performed in accordance with the Work Plan, however, the Agency has several comments regarding the content of the Report. A revision to the subject report is not required, however, a written response to our comments is required. Please format your written response using the February 17, 1995, GZA OU2 Remedial Investigation Work Plan Response Summary format.

A meeting between RISWMC, EPA and the RI/FS and risk assessment (RA) project teams is currently scheduled for the last week of this month. The purpose being to discuss and finalize, to the extent possible, the scope of the Phase I OU2/RI, OU2/FS and the OU2/RA. Any need for additional sampling of the Upper Simmons Reservoir can be discussed during that meeting.

GENERAL COMMENTS

1) RISWMC should contact the RIDEM to determine if the State will be providing any comments to the Report.

2) It appears that the Central Landfill could potentially impact the Lower Simmons Reservoir. Lead and zinc results for sample "SED93-28-O", collected from the lower/downstream portion of Upper Simmons Reservoir, exceed the Long and Morgan ER-L values for these metals, although the landfill-derived ("inorganic") upper sediment layer was not analyzed for metals at this location. Additional sampling (surface water and sediment) near the outlet of the Upper Simmons Reservoir and at the inlet of the Lower

Simmons Reservoir should be performed to determine if landfill-related contamination has been transported to the Lower Simmons Reservoir.

3) Additional sediment and surface water sampling is required to fully characterize the contaminant migration pathway and the ecological exposure routes. (Please refer to comments 3 and 10 in EPAs, Letter to D. aRusso from J. Brown, RE: Draft OU2 RI Work Plan, dated August 25, 1994.)

4) Although references are cited in the text of the Report, a References Section is **not** included in the document. Include the Reference Section in the Response Summary.

5) In both the Work Plan and the Report, the word "site" should only be used as defined in GZAs February 17, 1995 letter to D. aRusso, RE: OU2 RI Draft Work Plan Response Summary, response No. 9.

PAGE SPECIFIC COMMENTS

6) Page 1, Section 1.10, paragraph 3: The text refers to the original sediment as "organic bottom sediment", and implies that the landfill-derived sediment is more inorganic in its composition than the original sediment. However, on page 3, Item 5, Phase II TOC determinations indicate that the original bottom sediments are "more mineral" (less TOC) than the landfilled-derived sediments. The confusion resulting from this contradiction is increased when in Item 6 (page 3) the text reads: "... the inorganic landfill-derived sediments ...", and in paragraph 7 of Section 3.34 (page 15): "... the high mineral soil content original bottom sediment samples ...". The description of the landfill-derived and original sediments as inorganic and organic, respectively, is inaccurate and should be avoided in future reports and correspondence.

7) Pages 4 and 5, Item 9, third, fifth and sixth bullets: The text indicates that seven semi-VOCs exceeded Long and Morgan ER-L "criteria". (NOTE: The Long and Morgan Effects Range-Low and Medium are **values** and should not be misconstrued as **criteria**.) However, the text in Section 5.41 of the Work Plan (page 14) implies that "sediment quality criteria (SQC)" derived by Equilibrium Partitioning (EqP) would be used to assess VOC and semi-VOC concentrations detected in the sediments, and that Long and Morgan values would be used to assess metal concentrations.

With respect to the Upper Simmons Reservoir, and as implied in the Work Plan, EqP-based SQC, which are appropriate **only** for nonionic organic contaminants, should be used to assess VOC and semi-VOC sediment concentrations. In this case, using EqP-based SQC is more appropriate than using Long and Morgan values because the latter are predominantly based on a database from coastal marine and estuarine environments. (NOTE: Long *et al.*, in press, have actually eliminated all freshwater data from their latest revised database). This comment also applies, where appropriate, to Sections 4.30 (page 17) and 4.40 (pages 17 and 18) of the Report.

It should be noted that the EPA has now finalized and published (September 1993) Sediment Quality Criteria for the Protection of Benthic Organisms for the following compounds: fluoranthene, acenaphthene, phenanthrene, dieldrin, and endrin. These criteria should be preferentially used, when appropriate, over EqP-based SQC or Long and Morgan values.

8) Page 7, Paragraph 2: The text indicates that an explanation is provided ("below") as to **how** the compression factor calculations were performed to account for the lost volume of sediment core, however, the text on page 7, paragraph 4, fails to provide such explanation. The text in paragraph 4 reads: "Accuracy of this method of compression estimation would be compromised if unknown amounts of the sample were lost from the bottom of the core tube during retrieval; however, as noted above, this does not appear to have been a significant concern"; such text conflicts with the text in paragraph 2 and should be corrected in the Response Summary.

9) Page 7, paragraph 4: The text indicates that compression of sediments at three core locations were measured before the cores were retrieved. However, in the list of the three sediment core locations (line 12), SED93-21 is listed twice. The three sediment core locations should be correctly identified in the Response Summary.

10) Page 8, paragraph 2: The Response Summary should clarify **which** were the "sediment layers" selected for AVS and SEM analysis, and **what was the rationale** for their selection?

11) Page 8, Section 2.10: The background sediment sample was composed of topsoil collected from the undercut banks of Cedar Swamp Brook. The assumption that the topsoil is representative of soil that would be transported by the stream and deposited in the reservoir is tenuous, and the use of this soil sample as a sediment background sample is inappropriate. In addition, it has been stated in the OU1 RI Report (GZA, 1993) that Cedar Swamp Brook (and the Quarry Stream) receive contaminated groundwater from the landfill, therefore these surface water bodies may be inappropriate for use in providing a sediment background sampling location. (No map location of the background sample was provided; a verbal description of the location, "500 feet upgradient from the Central Landfill site", is insufficient information for EPA to evaluate the appropriateness of this location.) . Include a figure in the Response Summary which locates the background sample.

An appropriate upstream **sediment** sampling location can be selected in one of the tributary streams to the Cedar Swamp Brook for background purposes. The determination of the sediment background sampling location should be made based on all hydrogeological information currently available, in order to avoid locations that may potentially receive site contaminants via groundwater discharge. Attempts should be made to collect the background sample in stream pools or other depositional areas. Collection of multiple background sample locations is likely warranted in this situation. The locations of the selected sediment background samples should be clearly depicted in

an appropriate figure in the OU2 Task 1, SAP/FSP.

12) Page 11, Section 3.30, paragraph 1, line 1: The text should read: "All physio-chemical and **physical** analyses ...".

13) Pages 14 and 15, Section 3.34: Table 2 should have been referenced in this Section.

14) Pages 14 and 15, Section 3.34: It should have been noted in this section that the sample handling procedure was inadvertently altered for sediment sample SED93-23-I, (sample was packed outside of the glove box, as stated on page 8). In the Response Summary, identify possible anomalies in the SEM and AVS results for this sample, due to the departure from the standard sample handling methodology.

15) Page 15, Section 4.10, paragraph 3: The following text is incorrect: "Long and Morgan Effects Ranges are expressed as Effects Range-Low (ER-L), Effects Range-Median (ER-M), and **Overall Apparent Effects Thresholds (OAETs)**." OAET values (commonly known just as AET, **not** OAET) were **not** derived by Long and Morgan (1990 and 1991). The AET approach was prepared by PTI Environmental Services of Bellevue, Washington, for the U.S. EPA Region 10 (Office of Puget Sound, Seattle, Washington) (PTI Environmental Services, 1988, The Apparent Effects Threshold Approach; Briefing Report to the EPA Science Advisory Board, Puget Sound Estuary Program). The text should appear correctly in future reports and correspondence.

Please call me at (617) 573-5779 if you have any questions regarding these comments.

Sincerely,

James M. Brown

James M. Brown
Remedial Project Manager

cc: Dick Boynton, EPA
Warren Angell, RIDEM
Tim Prior, USFW
Becky, Cleaver, HNUS